

Technical Attachment**SMG Support to Project NOAMA**

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On July 24 the NASA Mission Operations Directorate (MOD) requested the NWS Spaceflight Meteorology Group to furnish weather support for an unusual project involving a prominent film director, the Russian Academy of Sciences, and a diverse marine expeditionary force. This endeavor was labeled the NASA Oceanographic Analog Mission Activity, or NOAMA project.

James Cameron, of the movie "Titanic" fame, invited NASA to participate in a series of expeditions to study the "black smoker" deep-sea hydrothermal vents in the Atlantic and Pacific Oceans. The Russian vessel Keldysh, which deploys two Mir submersibles, was the primary dive ship along with another vessel of Cyprus registry, Ares, which is equipped with two American submersibles called Deep Rovers. NASA MOD in turn requested daily weather support in the form of forecasts and briefings for weather and sea conditions along the route of the ships as they moved to the predetermined dive sites on the Atlantic Ridge. This weather support was intended for the personnel manning the ExPOC (Exploration and Planning Operations Center) at Johnson Space Center, who were communicating with an astronaut and a NASA senior scientist aboard ship.

The author, an SMG lead forecaster, was assigned as project coordinator to develop the forecast product and operational procedures. Techniques development meteorologist Brian Hoeth assisted with software. Other SMG personnel rotated through the forecast shifts during the Atlantic phase of the project. One challenging aspect of the project was the short fuse nature of the support request. SMG received the task on July 24 and was asked to begin issuing forecasts and briefings on July 25.

On July 26, the ships Keldysh and Ares sailed from St. Johns, Newfoundland, to the first planned dive site, "Menez Gwen," on the Atlantic Ridge. After five days of diving (July 28-August 2), the expedition sailed south along the ridge to a site called "Lost City." After two days of diving at that site (August 8-9) the ships arrived at "Snake Pit," the southernmost dive site on the Atlantic Ridge for two more dives before sailing for Antigua.

The first SMG forecast and briefing was issued on Friday, July 25. Forecasts and briefings continued daily until the arrival of both ships on August 18 at St Johns, Antigua, in the Windward Islands. This terminated the Atlantic Expedition, but other missions are planned for the Pacific and possibly the Gulf of Mexico. If NASA continues to participate, SMG may be asked to furnish weather support for these future expeditions.

Weather at the dive sites and along the Atlantic Ridge was ideal for maritime operations except for one day when a strong low pressure system passed just north of "Menez Gwen," producing strong winds and high seas on August 4. This was forecast accurately by SMG.

Marine forecasting was a new discipline to most of the current SMG staff, but it had been an integral part of SMG operations during the Gemini and Apollo programs of the 1960s and early 1970s. Resources for this project consisted of marine observations and NCEP forecast guidance available on AWIPS, satellite imagery and marine observations on MIDDS, and data from NOAA and U. S. Navy Web sites. The SMG forecasters were able to provide accurate forecasts and briefings on a daily basis and NASA personnel manning the ExPOC were pleased with the support provided.